IDAPA 37
TITLE 03
Chapter 09

37.03.09 - WELL CONSTRUCTION STANDARDS RULES

000. LEGAL AUTHORITY (Rule 0).
The Idaho Water Resource Board adopts these rules under the authority provided by Section 42-238(4), Idaho Code. (7-1-93)

001. TITLE AND SCOPE (Rule 1).

01. Title. (7-1-93)

02. Scope. The Department of Water Resources has statutory responsibility for administering the appropriation and allotment of the ground water resources of the state and to protect the resource against waste and contamination. The 1987 Idaho Legislature enacted amendments to the existing statutes which requires amendment of the rules of well construction standards. These rules are applicable to all water wells, monitoring wells, low temperature geothermal wells, injection wells and other artificial openings and excavations in the ground which are more than eighteen (18) feet in vertical depth below land surface as described in these rules. Many holes drilled into the ground do not constitute a well. Any time that such a hole is constructed the intent of these rules shall be observed. If waste or contamination is attributable to this type of hole, the hole shall be abandoned as determined by the Director. (7-1-93)

002. WRITTEN INTERPRETATION (Rule 2).

003. ADMINISTRATIVE APPEALS (Rule 3).

004. -- 009. (RESERVED).

010. DEFINITIONS (Rule 10).
Unless the context otherwise requires, the following definitions govern these rules. (7-1-93)

01. Abandoned Well. Any well which has been filled or plugged so that it is rendered unproductive and will prevent contamination of the ground water. A properly abandoned well will not produce water nor serve as a channel for movement of water from the well or between water-bearing zones. (7-1-93)

XX. Abandonment. The filling or plugging of a well so that the well will not produce water, serve as a conduit for the movement of pollution, allow the movement of groundwater between aquifers, or allow the downward movement of water in the well casing or into the aquifer.

02. Annular Space. The space between two (2) concentric cylindrical objects, one of which surrounds the other, such as the space between the walls of a drilled hole (well bore) and a casing or between a temporary surface casing and a permanent casing. (7-1-93)

03. Aquifer. Any geologic formation that will yield water to a well in sufficient quantities to make the production of water from this formation feasible for beneficial use. (7-1-93)

04. Area Of Drilling Concern. An area designated by the Director in accordance with Section 42-238(7), Idaho Code. (7-1-93)

05. Artesian Water. Any water that is confined in an aquifer under pressure so that the water will rise in the well casing or drilled hole above the elevation where it was first encountered. This term includes water of flowing wells and water under pressure in wells that do not flow. (7-1-93)

06. Artificial ~~Gravel~~ Filter Pack. The placement of **clean, well-rounded, smooth, uniform sand or** gravel ~~or other permeable material~~ in the annular **space between the borehole wall** and ~~the around ta~~ perforated well casing or well screen. A **filter** ~~gravel~~ pack is frequently used to prevent the movement of finer material into the well casing and to increase the ability of the well to yield water. (7-1-93)

XX. Bentonite Sealants. The term "bentonite" includes slurries or mixtures of water and sodium bentonite and solid bentonite, such as chips and pellets. The solid bentonite may be coated to delay hydration.

07. Board. The Idaho Water Resource Board. (7-1-93)

08. Bore Diameter. The diameter of the hole in the formation made by the drill bit or reamer. (7-1-93)

09. Bottom Hole Temperature Of An Existing Or Proposed Well. The temperature of the ground water encountered in the bottom of a well. (7-1-93)

10. Casing. The conduit to maintain the well opening and to prevent waste and contamination of the ground water as required by these standards, or as otherwise used in the construction of a well. It does not include well screens or liners used in the construction of a well. (7-1-93)

11. Cathodic Protection Well. Any artificial excavation in excess of eighteen (18) feet in vertical depth constructed for the purpose of protecting certain metallic equipment in contact with the ground. Commonly referred to as cathodic protection. (7-1-93)

12. Cement Grout. A mixture of water and cement in the ratio of not more than six (6) gallons of water to a ninety-four (94) pound sack of portland cement which is fluid enough to be pumped through a small-diameter pipe. To obtain a better flowing mixture, three (3) to five (5) pounds of bentonite may be added per sack of cement and the water increased to not more than six and one-half (6.5) gallons per sack of cement. Other cement grout or neat cement mixes may be used. These mixes shall be mixed and installed in accordance with the American Petroleum Institute Standards - API Class A through H. As found in API RP10B "Recommended Practice for Testing Oil Well Cements and Cement Additives," current edition or other approved standards. (7-1-93)

13. Conductor Pipe. The first and largest diameter string of casing to be installed in a low temperature geothermal resource well. This casing extends from land surface to a depth great enough to keep surface waters from entering and loose earth from falling in the hole prior to setting surface casing. (7-1-93)

14. Consolidated Formations. Naturally-occurring geologic formations that have been lithified (turned to stone). The term is sometimes used interchangeably with the word "bedrock" and includes rocks such as basalt, rhyolite, sandstone, limestone and shale. Commonly, these formations will stand at the edges of a bore hole without caving. (7-1-93)

15. Contamination. The introduction into the natural ground water of any physical, chemical, biological or radioactive material which may: (7-1-93)

a. Cause a violation of State Drinking Water Standards; or (7-1-93)

b. Adversely affect the health of the public; or (7-1-93)

c. Adversely affect a designated and protected use of the State's ground water. Contamination includes the introduction of heated water or cooled water into the ground water if the alteration of ground water temperature renders the ground water less suitable for beneficial use. (7-1-93)

16. Department. The Idaho Department of Water Resources. (7-1-93)

17. Director. The Director of the Idaho Department of Water Resources or his duly authorized representatives. (7-1-93)

XX. Disinfection. Disinfection (or disinfecting) is the use of chlorine or other agents or process approved by the Director, in sufficient concentration and for a contact time adequate to inactivate coliform bacteria.

XX. Drilled Well. A drilled well is a well in which the hole is usually excavated by mechanical means such as rotary, cable tool, or auger drilling equipment.

XX. Driven Well. A driven well is a well constructed by joining a "drive point" to a length of pipe, then driving the assembly into the ground.

XX. Dry Hole Well. A dry hole well is a well that does not yield adequate water for beneficial use.

XX. Formation Seal. A formation seal is is cement grout or bentonite installed in the annular space between the bore hole and the permanent casing to prevent movement of groundwater up or down the outside of the permanent casing. In some wells, the formation seal may extend up the outside of the permanent casing and become continuous with and part of the surface seal.

18. Hydraulic Fracturing. A process whereby water or other fluid is pumped under high pressure into a well to fracture and clean-out the reservoir rock surrounding the well bore thus increasing the flow into the well. (7-1-93)

19. Injection Well. Any excavation or artificial opening into the ground which meets the following three (3) criteria: (7-1-93)

a. It is a bored, drilled or dug hole, or is a driven mine shaft or driven well point; and (7-1-93)

b. It is deeper than its largest straight-line surface dimension; and (7-1-93)

c. It is used for or intended to be used for subsurface placement of fluids. (7-1-93)

20. Intermediate String Or Casing. The casing installed within a low temperature geothermal resource well to seal out brackish water, caving zones, etc., below the bottom of the surface casing. Such strings may either be lapped into the surface casing or extend to land surface. (7-1-93)

XX. Jetted Well. A jetted well is a well in which the borehole or drillhole is made by the use of a high-velocity stream or jet of water.

XX. Liner. Liner means the inner tubing, piping or conduit inside the casing.

21. Mineralized Water. Any naturally-occurring ground water that has an unusually high amount of chemical constituents dissolved within the water. Water with above five thousand (5000) ppm total dissolved solids is considered mineralized. (7-1-93)

22. Modify. A change in the construction of an existing well which deepens the well, **raises the top of the casing to a higher elevation,** increases the dimensions of the well or which causes or may cause the well to not meet the minimum well construction standards as determined by the Director. (7-1-93)

23. Monitoring Well. Any well more than eighteen (18) feet in vertical depth constructed to evaluate, observe or determine the quality, quantity, temperature, pressure or other characteristics of the ground water or aquifer. (7-1-93)

XX. Neat Cement. Neat cement is either portland cement types I, II, III, or high-alumina cement mixed with not more than six gallons of potable water per sack of cement (ninety-four pounds per sack).

XX. Neat Cement Grout. Neat cement grout is neat cement with up to five percent bentonite clay added, by dry weight of the bentonite.

24. Pitless Adaptor Or Pitless Unit. An assembly of parts designed for attachment to a well casing which allows buried pump discharge from the well and allows access to the interior of the well casing for installation or removal of the pump or pump appurtenances, while preventing contaminants from entering the well. (7-1-93)

25. Production String. The casing or tubing through which a low temperature geothermal resource is produced. This string extends from the producing zone to land surface. (7-1-93)

26. Puddling Clay. A mixture of bentonite, other expansive clays, fine-grained material and water, in a ratio of not less than seven (7) pounds of bentonite or expansive clay per gallon of water. Puddling clay must be composed of not less than fifty (50%) percent expansive clay with the maximum size of the remaining portion not exceeding that of coarse sand. (7-1-93)

XX. Remediation Well. A remediation well is a well used to inject or withdraw fluids (such as air, groundwater, or other solutions) for the purposes of remediating, cleaning up, or controlling potential or known groundwater contamination. Remediation wells include air sparging well, vapor extraction well, and wells for injection of chemicals for remediation or treatment of contaminated groundwater.

27. Seal Or Seal Material. The impermeable material, such as cement grout, bentonite grout, **neat cement grout, or neat cement** ~~or puddling clay,~~ placed in the annular space between the borehole wall and the permanent casing, to prevent the downhole movement of water or the vertical movement and mixing of artesian waters. ~~Seals may not be installed dry unless in granular form and above the water table.~~ (7-1-93)

28. Surface Casing. The first string of casing in a low temperature geothermal resource well which is run after the conductor pipe to anchor blow out prevention equipment and to seal out all existing cold ground water zones. (7-1-93)

XX. Surface Seal. A surface seal is cement grout or bentonite installed in the annular space between the bore hole and the permanent surface casing to prevent surface water from moving down the outside of the permanent casing.

29. Unconsolidated Formation. A naturally-occurring earth formation that has not been lithified. Alluvium, soil, sand, gravel, clay, and overburden are some of the terms used to describe this type of formation. (7-1-93)

30. Well. An artificial excavation or opening in the ground more than eighteen (18) feet in vertical depth below land surface by which ground water of any temperature is sought or obtained. Well also means any injection well more than eighteen (18) feet in vertical depth below land surface and any test well, monitoring well, cathodic protection well, observation well or exploratory well more than eighteen (18) feet in vertical depth below land surface that is constructed to evaluate the ground water resource or to evaluate contamination of the resource. Well does not mean a hole drilled for mineral exploration, oil and gas exploration (for which a permit has been issued pursuant to Section 47-320, Idaho Code) for dam or building foundation dewatering, for foundation geotechnical evaluations, for the installation of standpipes or piezometers installed near dams, buildings or other construction sites for the sole purpose of measuring uplift forces caused by water or for the purpose of collecting soil samples above the water table. (7-1-93)

XX. Well Development. Well development is the process of establishing the optimal hydraulic contact possible between the well and the aquifer supplying water. Development by bailing, pumping, surging, or jetting will maximize water yield, break down the compacted borehole wall, liquefy jelled mud and remove mud and formation fines from the well.

XX. Well Designer. Professional Engineers licensed in Idaho under the authority of I.C. §54-1201 *et. seq.* or Professional Geologists licensed in Idaho under the authority of I.C. §54-2801 *et. seq.* who prepare specifications and plans for the construction, modification, installation or abandonment of a water well, injection well, or monitoring or remediation well; or monitoring or remediation well network.

31. Well Driller Or Driller. Any person **licensed under the authority of I.C. §42-238** who excavates or opens a well or wells for compensation or otherwise upon any land of the well driller or upon other land. Well driller does not include those persons who construct a well on their own property for their own use without the aid of any power driven mechanical equipment. (7-1-93)

32. Well Drilling Or Drilling. The act of constructing a new well or deepening or modifying an existing well by any percussion, rotary, boring, digging, jetting or auguring method. (7-1-93)

33. Well Owner. The owner of the land on which the well is located unless a deed, covenant, contract, easement, or other documentation acceptable to the director is provided to demonstrate that the well is owned by another. (7-1-93)

34. Well Rig. Any power driven percussion, rotary, boring, digging, jetting or auguring machine used in the construction of a well. (7-1-93)

011. -- 024. (RESERVED).

025. CONSTRUCTION OF COLD WATER WELLS (Rule 25).

01. General. (7-1-93)

~~a. All wells shall be constructed in a manner that will guard against waste and contamination of the ground water resources of the state of Idaho. The adopted standards are minimum standards which must be adhered to in the construction of all wells. The Director shall, when necessary to protect the ground water resource, require that specific wells be constructed in compliance with such additional standards as determined necessary. All wells constructed for domestic water shall, in addition to meeting these standards, meet all of the siting and distance requirements set forth by the appropriate District Health Department and Idaho Department of Environmental Quality rules. The well driller and the property owner are charged with the responsibility of taking whatever steps might be necessary in any unique situation to guard against waste and contamination of the ground water resources. It will be necessary in some cases to construct wells with significant additional controls beyond the minimum standards to accomplish these goals. (7-1-93)~~

~~b. If, in any given unique case, it appears that the ground water resources can be protected against waste and contamination without complying with the minimum well construction standards, a written request for a waiver may be submitted to the Department. If the Director determines that the waiver can be granted, the well can be constructed with some variance from the minimum standards. In order to prevent unnecessary delay the Director may grant a waiver, upon oral request, provided that the oral request is followed by a written request as specified above. (7-1-93)~~

a. The Well Driller (or Well Designer, if different) shall design and install

i. Every well based on the geologic and groundwater conditions known to exist at the well site and to ensure protection against waste and contamination of the groundwater resources of the state of Idaho;

ii. Every well capable of producing, where obtainable, the quantity of water required by the Well Owner, subject to law;

iii. Wells that comply with these standards and all of the siting and distance requirements established by the appropriate District Health Department and set forth in Idaho Department of Environmental Quality rules set forth in IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules";

iv. Injection wells in compliance with these standards and IDAPA 37.03.03, "Rules for the Construction and Use of Injection Wells".

b. The Well Driller (or Well Designer, if different) may submit an oral or written request to the Director for a waiver of these well construction standards, if the Well Driller (or Well Designer, if different) determines that the ground water resources can be protected against waste and contamination without complying with the minimum well construction standards. The Well Driller (or Well Designer, if different) shall submit a written request within 3 business days after the Director grants a waiver based on the oral request.

c. The standards specified herein, except as conditioned by any permits issued by the Department, apply to

i. Wells in which the temperature of groundwater at the bottom of the well is less than the temperature defined in I. C. §42-233 as low temperature resource;

ii. Injection wells;

iii. Remediation and monitoring wells; and

iv. Heat recovery and recycling wells.

d. No person except Well Drillers licensed under the authority of I. C. §42-238 shall construct, install, or modify a well.

02. Casing. (7-1-93)

a. ~~Casing shall be installed in every well. For water wells and injection wells the casing shall extend at least twelve (12) inches above land surface and finished grade and to a minimum depth of eighteen (18) feet below land surface or as required by Rule Subsection 025.03 below. Open well pits with the casing below finished grade are not allowed without written approval by the Director. Upon completion of drilling and prior to removal of well drilling equipment from a water well site, the top of the casing shall be completely covered with a one fourth inch (1/ 4") thick solid, new or like new steel plate welded in place, a threaded cap, or a watertight sanitary seal cover cap. In every instance where well casing is installed in a well, it shall be of steel in new, or like new condition, and be free of pits and breaks. When casing lengths are joined together, they shall be joined by welded joints or screw couple joints which shall be water tight or by other means as approved by the Director. If welded, the weld shall be at least as thick as the wall thickness of the well casing and fully penetrating. The specifications below under "Nominal Wall thickness" will be enforced, allowing a twelve and one half (12.5%) percent manufacturing tolerance. All permanent steel casing required to be installed in a well shall meet the minimum specifications listed in Table 1 shown below:~~

~~(7 1 93)~~

a. A Well Driller shall install casing in every water well and injection well.

i. The Well Driller shall install steel casing that meets or exceeds the American Society of Testing and Materials (ASTM) standard A53, Grade B or equivalent and that meets the minimum specifications, allowing a ten (10%) percent manufacturing tolerance, listed in the table below:

Permanent Steel Casing Minimum Specifications

Nominal Size (inches)	Outside Diameter (inches)	Nominal Wall Thickness (inches)	Weight Per Ft. (lbs.)
1 1/2	1.900	.145	2.72
2	2.375	.154	3.65
2 1/2	2.875	.203	5.79
3	3.500	.216	7.58
3 1/2	4.000	.226	9.11
4	4.500	.237	10.79
5	5.500	.244	13.70
6	6.625	.250	17.02
8	**8.625**	**0.250**	**22.36**
10	**10.750**	**0.250**	**28.04**
12	**12.750**	**0.250**	**33.38**
14	**14**	**0.250**	**36.71**
16	**16**	**0.250**	**42.05**
18	**18**	**0.250**	**47.39**
20	**20**	**0.250**	**52.73**
24	**24**	**0.250**	**63.41**
30	**30**	**0.250**	

ii. The Well Driller shall ensure that the casing extends at least twelve (12) inches above land surface and finished grade and to the depth required by Rule Subsection 025.03 below, but not less than eighteen (18) feet below land surface.

iii. Upon completion of drilling and prior to removal of well drilling equipment from a water well site, the Well Driller shall cover the top of the casing with a one-fourth inch (1/ 4") thick solid, new or like-new steel plate welded in place, or a vented and threaded cap, or a vented and watertight sanitary seal cover cap.

iv. The Well Driller shall join casing lengths by welded joints or screw-couple joints and shall ensure that the welded joints are straight and water tight. The Well Driller shall ensure that welded joints shall be made using welding rods of equal quality to the most noble metal, shall be at least as thick as the wall thickness of the well casing, and shall be fully penetrating.

v. No Well Driller shall install casing for below finished grade in open pits without written approval by the Director.

vi. The Well Driller shall install casing that has sufficient strength to withstand the normal forces which act upon the casing during installation and that is resistant to the corrosive effects of the surrounding formations, earth, and water.

vii. If the well will be installed in an area where corrosive water is present, the Well Driller (or Well Designer, if different) shall recommend to the Well Owner that casing of adequate wall thickness should be installed.

b. Based on the yield the well owner requires and upon subsurface conditions, the Well Driller shall use the table below to recommend to the well owner the diameter of the well casing that should be installed to minimize sand production.

Recommended Well Diameter		
Anticipated Well Yield in gpm	**Nominal Size of Pump Bowls in inches**	**Recommended Size of Well Casing in inches**
Less than 100	4	6 ID
75 to 175	5	8 ID

150 to 350	6	10 ID
300 to 700	8	12 ID
500 to 1000	10	14 OD
800 to 1800	12	16 OD
1200 to 3000	14	20 OD
2000 to 3800	16	24 OD
3000 to 6000	20	30 OD

c. The Well Driller shall install casings and liners sufficiently plumb and straight to allow the installation of screens, liners, pumps and pump columns without binding or having adverse affects on the operation of the installed pumping equipment.

d. The Well Driller may demonstrate plumbness and alignment by one of the following methods:

i. By performing a cylindrical plummet test or

ii. By using a photographic, mechanical, or pendulum drift indicator, or

iii. By passing a twenty foot test section of pipe from the bottom of the well without binding.

(1) To test plumbness and alignment in wells where there are casing reductions, the Well Driller will test each section separately.

(2) The Well Driller shall use the twenty foot test section that has the diameter specified in the table below:

Twenty-foot Test Section Specifications		
Nominal Size (inches)	**Outside Diameter of nominal casing (inches)**	**Test Section Outside Diameter**
1 1/2	1.900	0.75
2	2.375	1.0
2 1/2	2.875	1.5
3	3.500	2.0
3 1/2	4.000	2.5
4	4.500	3.0
5	5.500	3.5
6	6.625	4.0
8	**8.625**	**6.0**
10	**10.750**	**8.0**
12	**12.750**	**10.**
14	**14**	**11.0**
16	**16**	**14.**
18	**18**	**16.0**
20	**20**	**18.0**
24	**24**	**20.0**
30	**30**	**24.0**

b. ~~Plastic Well Casing may be used for monitoring wells. The use of plastic well casing for water wells shall be considered on a case-by-case basis upon the submittal of a waiver request. Plastic casing may be used~~

~~as a liner inside the required casing without a waiver or written approval. The specifications of any plastic casing to be used shall meet or exceed ASTM Standard F-480.~~ (7-1-93)

g. A Well Driller may install water well casing made of polyvinyl chloride if the casing:

i. Is new,

ii. Is clearly marked as well casing; and

iii. Complies with the standards adopted by the American Society for Testing and Materials, designated as ASTM F-480, which are hereby incorporated by reference. A copy of the standards may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103

h. If polyvinyl chloride casing is used, the Well Driller will ensure that the joint connections are:

i. Flush-threaded, or threaded and coupled (if the joint connections are flush-threaded or threaded and coupled, the well driller shall ensure that the connections are not over-tightened), or

ii. Joined with nonmetallic couplings that are sealed with elastomeric sealing gaskets and which consist of flexible thermoplastic splines that are inserted into precisely machined grooves in the casing,

iii. Not glued or joined by restraining devices that clamp into or otherwise damage the surface of the casing.

03. Sealing Of Wells~~Casing~~. ~~(7-1-93)~~

~~a. Well casings shall be sealed to prevent the possible downward movement of contaminated surface waters in the annular space around the well casing. The seal shall also prevent the upward movement of artesian waters within the annular space around the well casing that could result in the waste of ground water. The sealing is also to prevent the movement of ground water either upward or downward from zones that have been cased out of the well due to quality or other reasons. The seal material shall consist of cement grout, puddling clay or bentonite grout. The use of well cuttings alone is not an approved seal.~~ ~~(7-1-93)~~

~~b. One (1) of the following methods shall be used in placing surface seals:~~ ~~(7-1-93)~~

~~i. An open free standing hole, two (2) inches greater in diameter than the outside diameter of the permanent casing shall be drilled, or temporary surface casing at least two (2) pipe sizes larger than the permanent casing (six (6) inch permanent casing requires eight (8) inch temporary casing) shall be installed to a minimum depth of eighteen (18) feet below land surface, or to such additional depth as hereafter required (Figure 1.1a in APPENDIX A, located at the end of this chapter). If an open hole is drilled and permanent casing installed, the annular space between the wall and permanent casing shall be filled with puddling clay or bentonite grout during drilling. If the well is drilled open, the annular space must be filled with seal material and maintained full during installation of the permanent casing. If a temporary casing has been installed, upon completion of the drilling, the annular space shall be filled with seal material and kept full while withdrawing the temporary casing.~~ ~~(7-1-93)~~

~~ii. A temporary casing a minimum of six (6) inches in diameter greater than the permanent casing and a minimum of five (5) feet in length shall be installed. The temporary casing shall extend not less than one (1) foot above ground surface and not less than three (3) feet below ground surface. The annular space shall be kept full of seal material in a slurry condition at all times during drilling. Upon completion of drilling, the temporary casing shall be removed (Figure 1.1b in APPENDIX A, located at the end of this chapter).~~ ~~(7-1-93)~~

~~c. In wells where the above described methods of sealing wells do not apply, special sealing procedures can be approved by the Director upon written request by the well driller.~~ ~~(7-1-93)~~

~~d. Consolidated formations. When a water well is drilled into and acquires water from an aquifer that is overlain by consolidated formations which are above the water table, unperforated casing shall be installed so that~~

~~it extends into the consolidated formation or to a depth of eighteen (18) feet, whichever is greater. If necessary to complete the well, a smaller diameter casing, liner, or well screen may be installed below the unperforated casing.(7-1-93)~~

~~e. Unconsolidated formations without significant clay beds. When a water well is drilled and acquires water from an aquifer which is overlain with unconsolidated formations, such as sand and gravel without significant beds of clay, an unperforated well casing shall extend to at least five (5) feet below the water table. If the water table is within eighteen (18) feet of land surface, unperforated well casing shall extend to at least eighteen (18) feet. (7-1-93)~~

~~f. Clay beds in unconsolidated formations. When a well is drilled to develop water from an aquifer that is overlain by unconsolidated deposits such as sand and gravel, and there are significant interbeds of clay above the water table, the well casing may be terminated in a clay bed which will prevent the downward or upward movement of water. Unperforated casing shall extend to and be driven into the clay stratum overlying the water-bearing zone. A minimum of eighteen (18) feet of casing shall be installed below land surface. A single casing may extend from land surface to the water bearing zone, or a smaller diameter casing, perforated liner, or well screen may be installed below the seal depth. (7-1-93)~~

a. General Standards for Seal Materials.

i. Bentonite Materials

1. The Well Driller may install pelletized, granulated, powder, or chip bentonite in the construction of seals or in decommissioning of wells.
2. The Well Driller shall install only bentonite specifically designed for sealing or decommissioning and within the industry tolerances for dry western sodium bentonite.
3. All unhydrated bentonite used for sealing or decommissioning must be free of organic polymers.
4. Polymer additives must be designed and manufactured to meet industry standards to be non-degrading and must not act as a medium which will promote growth of micro-organisms.
5. The Well Driller shall install and place bentonite in accordance with the manufacturer's specifications.

ii. Cement Sealants

1. Neat cement consists of either portland cement types II, III, or high-alumina cement mixed with not more than six gallons of potable water per sack of cement (ninety-four pounds per sack).
2. Neat cement grout consists of neat cement with up to five percent bentonite clay added, by dry weight of the bentonite. Bentonite is added to improve flow qualities and compensate for shrinkage.
3. Concrete sealants consist of clean, hard and durable aggregate with not less than five sacks (ninety-four pounds per sack) of portland cement per cubic yard of concrete sealant.
    a. The maximum diameter of aggregate particles may not exceed 1 1/2 inches, but in any case may not exceed 1/5 the minimum width of the casing thickness.
    b. The ratio of coarse aggregate to fine aggregate (passing No. 4 U.S. Standard Sieve) must be approximately 1 ½ to 1 by volume, but in any case, may not exceed 2 to 1 nor be less than 1 to 2.
    c. Expanding agents, such as aluminum powder, may be used at a rate not exceeding 0.075 ounce (1 level teaspoon) per sack (ninety-four pounds per sack) of dry cement. The powder may not contain polishing agents. High-alumina cement and portland cement of any type must not be mixed together.

iii. Sealing methods:

1. The Well Driller shall place neat cement or neat cement grout at least seventy-two hours before additional drilling takes place, unless special additives are mixed with the neat cement or neat cement grout that cause it to set in a shorter period of time.

2. The Well Driller shall install all hydrated seal material using a tremmie pipe or by pressure pumping the mixture from the bottom of the annular space to the surface in one continuous operation.
3. The Well Driller shall ensure that pelletized, granulated, powdered, or chipped unhydrated bentonite completely fills the annular space and the seal is free of voids or bridges.
    a. The Well Driller shall calculate the volume of unhydrated bentonite that would fill the annular space between the casing and the borehole and shall store at least 125% of the calculated unhydrated bentonite at the drill site.
    b. When pouring unhydrated bentonite from the surface to fill the annular space between the casing and the borehole, the Well Driller shall pour bentonite around all sides of the casing and shall use a tag line to measure the depth to the top of the bentonite.
    c. When installing unhydrated bentonite below the water table, the Well Driller shall install only unhydrated bentonite specifically manufactured for installation below the water level.

iv. The Well Driller shall never use drill cuttings, native dirt, soil, sand or gravel, or puddling clay to seal a well.

v. The Well Driller shall install dry granular bentonite or bentonite chips in an annular space with a minimum diameter of four inches larger than the nominal size of the casing.

vi. When installing seal material by pressure pumping though a tremie pipe or float shoe, the Well Driller may reduce the annular space between the casing and the borehole from a minimum of four (4) inches to a minimum diameter of two (2) four inches.

b. Surface Sealing.

1. The Well Driller shall
    a. Install a surface seal from land surface to a minimum depth of ten feet below the lowest elevation of the water table. If the lowest elevation of the water table is less than 8 ft below land surface, the Well Driller shall install a surface seal from land surface to a minimum depth of 18 ft feet below the land surface.
    b. Install a surface seal in the annular space between the bore hole and the permanent surface casing seal in all water wells to prevent surface water from flowing down the outside of the casing.
    c. Install the surface seal with a minimum diameter of four inches larger than the nominal size of the surface casing, to include the outside diameter of the bell, the bell and hub couplings, and the drive shoe.
    d. Ensure that
        1. The seal placed in an open annular space is a minimum of four inches greater in diameter than the nominal size of the permanent casing,
        2. The seal fully surrounds the permanent casing,
        3. The seal is evenly distributed, is free of voids, and extends to undisturbed or recompacted soil.

2. The Well Driller may
    a. Install the surface seal by pressure grouting from the bottom of the annular space until the seal material flows at the surface.
    b. Install the surface seal through a tremie pipe.
    c. Install the surface seal by pouring granular bentonite from the surface of the ground. When using this method, the Well Driller will tag the top of the bentonite as it is poured from the surface.

3. The Well Drill may install temporary casing in all unconsolidated formations such as in gravels, sands, or other unstable conditions where the Well Driller does not use drilling fluids or other means to keep the bore hole open.

4. When the Well Driller removes the temporary surface casing, the Well Driller shall place the seal material in the annulus in accordance with the procedures above.

5. Whenever a Well Driller moves the permanent surface casing or damages the existing surface seal, or whenever a Well Driller discovers that a surface seal was never installed on the well or has been damaged, the Well Driller shall repair, replace, or install a minimum of eighteen feet of surface seal around the permanent casing.

c. Formation Seals

i. Unconsolidated formation sealing - Without significant clay beds or other confining formations.

1. When a Well Driller installs a well into an aquifer overlain by unconsolidated formations (such as sand and gravel) without significant clay beds, the Well Driller will seal the annular space between the bore hole and the permanent surface casing in accordance with the surface sealing requirements above.
2. The Well Driller shall install a surface seal from land surface to a minimum depth of ten feet below the lowest elevation of the water table.

ii. Unconsolidated formation sealing - With significant clay beds or other significant confining formations.

1. When a Well Driller installs a well into an aquifer overlain by clay or other confining formations that are at least six feet thick, the Well Driller will seal the annular space between the bore hole and the permanent surface casing to prevent movement of water in the annular space between the permanent casing and the clay or other confining formation(s).
2. The Well Drill may seal the annular space using one of the following methods:
    a. The Well Driller shall drill hole at least four inches greater in diameter than the nominal size of the permanent well casing from the land surface into the clay bed or other confining formation located directly above the aquifer to be developed.
    b. The Well Driller shall fill the annular space with bentonite (slurry or unhydrated), cement grout, or neat cement to form a watertight seal between the casing and all confining formations encountered during drilling.
3. The Well Driller shall install all bentonite slurries, cement grout, or neat cement in the annular space by either pumping or tremming the seal material from the lowest clay bed or other confining formation of significance encountered, to land surface.
4. The Well Driller may keep the drill hole open through the use of a temporary casing or any other drilling method that stabilizes the bore hole wall.

iii. Consolidated formations.

1. When a Well Driller installs and constructs wells that penetrate an aquifer, either within or overlain by a consolidated formation, the Well Driller shall seal the annular space between the bore hole and the permanent casing using one of the following procedures:

    a. Procedure One:
        1. The Well Driller shall extend the upper drill hole at least four inches greater in diameter than the nominal size of the permanent well casing from land surface into a sound, unfractured, consolidated formation.
        2. The Well Driller shall install an unperforated permanent casing to extend to this same depth and drive the lower part of the casing into the consolidated formation to establish a watertight seal between the formation and the casing.

3. The Well Driller shall seal the annular space on the outside of the casing to land surface with cement grout, neat cement, or bentonite.
4. If the consolidated formation is present at a depth less than eighteen feet from land surface, the Well Driller shall ensure that the upper drill hole and permanent casing extends to a minimum of eighteen feet from land surface.
5. If the Well Driller seals the entire annulus from the bottom up to land surface by pumping cement grout, neat cement, or bentonite slurry by pumping, the Well Driller may reduce the diameter of the upper drill hole from a minimum of four inches to a minimum of two inches larger than the outside diameter of the permanent casing.

b. Procedure Two

1. The Well Driller shall install an upper drill hole at least four inches greater in diameter than the nominal size of the permanent casing from land surface to a depth of at least eighteen feet.
2. The Well Driller shall drive an unperforated permanent casing into the consolidated formation to establish a watertight seal between the formation and the casing.
3. Throughout the driving of the well casing to the consolidated formation, the Well Driller shall keep the annular space between the upper drill hole and the permanent casing at least one-half full with unhydrated bentonite, or bentonite slurry. The Well Driller shall fill the remainder of the annular space to land surface with cement grout, neat cement, or bentonite.

2. If the Well Driller installs a temporary surface casing according to either procedure one or two of this subsection, the Well Driller shall ensure that the casing is a minimum of eighteen feet long and at least four inches larger in diameter than the permanent casing.

iv. Driven Wells. When installing or constructing driven wells, the Well Driller shall install surface and formation seals in accordance with the procedures herein.

1. The Well Driller shall drive each casing or liner through an upper hole which shall be at least four inches greater in diameter than the inner casing or liner.
2. The Well Driller shall ensure that the annular space between the upper oversized drill hole and each casing is at all times at least one-half full with bentonite or bentonite slurry throughout all driving of the pipe.
3. If a temporary casing or other means of maintaining an open bore hole is utilized by the Well Driller, the Well Driller will install temporary casing that has an outside diameter a minimum of four inches larger than the permanent casing (for example, a ten-inch temporary casing for a six-inch permanent casing).
4. When the temporary casing is removed, the Well Driller shall fill the annular space between the bore hole and the permanent surface with sealant.

v. Artesian Water. When the Well Driller installs a well that produces or obtains artesian water, the Well Driller shall

1. Install and seal unperforated well casing into the confining stratum overlying the artesian zone as described above;
2. Install a control valve in wells that flow at the surface to ensure that the flow can be completely stopped; and
3. If leaks occur around the well casing or adjacent to the well, the Well Driller shall install seals, packers, casing or grout that will eliminate the leakage. The Well Driller shall not move his well drilling rig from the site until leakage has been eliminated.

vi. Artificial Filter-pack Wells. The Well Driller shall seal every artificial filter pack well using one of the following methods:

1. The Well Driller shall install the access pipes used to inject filter material gravel in the annular space and seal with sealing materials..
    a. The Well Driller shall ensure that the seal is watertight around the injection pipe and that the pipe is equipped with a watertight cap or plug.
    b. The Well Driller shall ensure that the seal extends to a minimum of ten (10) feet below the lowest elevation of the water table. If the lowest elevation of the water table is less than 8 ft below land surface, the Well Driller shall install a surface seal from land surface to a minimum depth of 18 ft feet below the land surface.

2. The Well Driller may install a temporary surface casing.
    a. The Well Driller will install the temporary casing at least four inches in diameter greater than the permanent casing and will install the temporary casing to at least 10 ft below the highest water table elevation.
    b. When the temporary casing is withdrawn, the Well Driller shall fill the annular space on the outside of the permanent casing with cement grout or bentonite as the temporary casing is withdrawn.
    c. The Well Driller may install access pipe or pipes for injecting sand into the filter pack. The Well Driller shall install a watertight cap or plug on the access pipe or pipes.

vi. Jetted wells.

1. The Well Driller shall install the surface seal in jetted wells to seal the annular space between the permanent casing and undisturbed native soil.

2. The Well Driller shall ensure that the annular space between the upper oversized drill hole and the permanent casing is at all times at least one-half full with bentonite or bentonite slurry throughout all driving of the pipe.

3. The remaining annular space to land surface shall be filled with cement grout, neat cement, or bentonite.

04. Artesian Water. When artesian water is encountered in the well, unperforated well casing shall extend into the confining stratum overlying the artesian zone. The casing shall be sealed into the confining stratum to prevent surface and subsurface leakage from the artesian zone. If the well flows at land surface, it shall be equipped with a control valve so that the flow can be completely stopped. If leaks occur around the well casing or adjacent to the well, the well shall be completed with seals, packers, casing or grout that will eliminate the leakage. The well driller shall not move his well drilling rig from the site until this has been accomplished. Some mixing of water may be required to develop an adequate water well; however, the mixing shall be restricted to water zones of similar pressure, temperature and quality. The Director may grant a waiver for good cause. The driller shall take precautions to case and seal out zones which may lead to waste or contamination. (7-1-93)

~~**05. Artificial Gravel Pack Wells**. If a well is to be artificially gravel packed, the casing shall be sealed using one (1) of the two (2) following methods: (7-1-93)~~

~~a. Access pipes used to inject gravel must be installed in the annular space prior to sealing the space with cement grout or puddling clay. Care should be taken to insure that the seal is water tight around the injection pipe. The pipe must be equipped with a water tight cap or plug. The surface seal must extend a minimum of eighteen (18) feet below land surface. (See Figure 2.2a, APPENDIX B, (located at the end of this chapter). (7-1-93)~~

~~b. If a permanent surface or outer casing or liner is installed in the construction of a gravel packed well, a temporary surface casing at least two inches larger than the permanent casing shall be installed to a minimum~~

~~depth of eighteen (18) feet below land surface. Upon completion of the drilling, the annular space shall be filled with cement grout or puddling clay and the temporary casing withdrawn. The space between the permanent outer casing and the liner or inner casing shall be covered with a water-tight seal. This seal shall be of metal welded to both casings in a manner that prevents the movement of surface water into this space and hence into the gravel-packed zone. An access pipe for injecting gravel may be permanently installed. The seal must remain water tight and the pipe equipped with a water tight cap or plug. (See Figure 2.2b, APPENDIX B, located at the end of this chapter).(7-1-93)~~

~~**06. Driven Wells**. For all driven wells a well bore having a diameter of at least three (3) inches larger than the outside diameter of the casing shall extend at least three (3) feet below the land surface as outlined in sealing procedure Rule Subsection 025.03. The annular space around the drive pipe shall be filled with seal material and maintained in a slurry condition at all times during driving of the casing. (7-1-93)~~

~~**07. Dug Wells**. All dug wells greater than eighteen (18) feet in depth shall be constructed with a water tight surface curbing extending to a depth of at least eighteen (18) feet. The surface curbing and/or surface casing required shall be of concrete, concrete tile, or steel. Concrete pipe, if used, must meet or exceed ASTM C67-72T Class III specification. Cast in place concrete if used shall, at a minimum, be six (6) inches thick; however, the driller shall determine the wall thickness necessary to withstand external pressures which might cause the casing to collapse. Steel casing must, at a minimum, meet the specifications in Rule Subsection 025.01 and Table 1 of these standards. If precast concrete tile or steel casing is used for the surface casing, the well diameter to the bottom of the surface casing shall be two (2) inches greater than the outside diameter of the tile or steel. The annular space shall be filled with cement grout or puddling clay to a depth of at least eighteen (18) feet below the land surface. In a buried slab type well, the slab shall be at least eighteen (18) feet below the land surface. The slab shall be steel reinforced concrete at least four (4) inches in thickness. The seal between the casing and the slab shall be water tight. The well bore shall be backfilled with puddling clay or cement grout to the land surface. (See Figure 3, APPENDIX A, (located at the end of this chapter.) (7-1-93)~~

07. Ground Water Heat Pump Wells.

a. Open Loop heat pump wells must be constructed in accordance with the Well Construction Standards herein and in accordance with IDAPA 37.03.03, "Rules for the Construction and Use of Injection Wells", except that the Well Driller may not be required to install casing in the well(s) or extend surface casing above the land surface.

b. Closed Loop Heat Pump Wells must be installed and constructed in accordance with the following standards.

i. The Well Driller shall

1. Install each borehole of sufficient diameter to allow placement of the re-circulating pipes and placement of seal material, but not less than a minimum of four (4) inches larger than the total nominal diameter of the loop pipes; and
2. Install seal material by tremie pipe from the bottom of the borehole to the top.

ii. The Well Owner shall

1. Install re-circulating pipe material composed of polyethylene, grade p34, minimum cell classifications PE 355434C or PE 345434C when tested under ASTM Standard 3350;
2. Join pipe using the socket or butt heat fusion technique referenced in ASTM Standards D3261 or D2683;
3. Use only food grade potassium acetate or food grade propylene glycol for the circulating fluid;
4. Shall pressure test the system after installation, but before installation of the seal, at a minimum of two (2) times the system operating pressure; and
5. Shall repair, replace, or plug the re-circulating pipe, if a pressure loss is detected.

c. No person except a Well Driller licensed under the authority of I. C. §42-238 shall construct, install, or modify a groundwater heat pump well.

08. Injection Wells. Only a Well Driller (or Well Designer, if different) shall design, install, construct, and abandon ~~In addition to meeting the requirements of these standards, the construction of all~~ injection wells over eighteen (18) feet in vertical depth ~~shall comply~~ in compliance with these minimum well construction standards and with the requirements of the injection well permit and the injection well rules. Drillers shall obtain from the Director a certified copy of the permit authorizing construction or modification of an injection well before beginning work. (7-1-93)

09. Cathodic Protection Wells. Only a Well Driller (or Well Designer, if different) shall design, install, construct, and abandon all cathodic protection wells ~~shall be constructed~~ in compliance with these rules.(7-1-93)

10. Monitoring and Remediation Wells. ~~All monitoring wells shall be constructed and maintained in a manner that will prevent waste or contamination and as otherwise required by these rules. When a monitoring well is no longer useful or needed, the owner or operator of the well shall abandon the well in accordance with Rule Subsection 025.12. (7-1-93)~~

a. Professional Engineers licensed under the authority of I. C. §54-1201 *et. seq.* or Professional Geologists licensed under the authority of I. C. §54-2801 *et. seq.* shall submit designs and specifications for each monitoring or remediation well and every monitoring or remediation well network to the Director for approval.

b. The designs and specification shall demonstrate that

i. The groundwater resources are protected against waste and contamination.

ii. The monitoring wells and monitoring well network will obtain the information on water elevations and water quality for which the monitoring well or monitoring well network is required.

iii. The remediation wells and remediation well network will inject or withdraw fluids (such as air, groundwater, or other solutions) at the appropriate location and in sufficient quantities, at sufficient concentrations, and sufficient duration to remediate, clean up, or control potential or known groundwater contamination.

iv. The remediation and monitoring wells will be constructed so as to prevent the spread of contamination between aquifers.

v. The well casing, screens, filler and seal materials are resistant to the corrosive effects of chemicals that might be expected in the groundwater.

vi. The remediation and monitoring wells will be abandoned in accordance with the mininum standards herein.

c. No person may divert groundwater for domestic, industrial, municipal, commercial, or agricultural uses from a remediation or monitoring well without the prior approval of the Director.

d. No person except Well Drillers licensed under the authority of I.C. §42-238 shall install, construct, or modify a remediation or monitoring well.

11. Access Port Or Pressure Gage. Upon completion of a well and before removal of the well rig from the site, the well shall be equipped with an access port that will allow for measurement of the depth to water or an approved pressure gage fitting that will allow access for measurement of shut-in pressure of an artesian flowing well. All pressure gage fittings shall include control valves such that the pressure gage can be removed. Approved access ports are illustrated in Figure 4, APPENDIX D, (located at the end of this chapter) together with approved locations for pressure gage fittings. Air lines are not a satisfactory substitution for an access port. Nonflowing domestic and stock water wells that are to be equipped with a sanitary seal with a built-in access port are exempt from this requirement. (7-1-93)

12. Abandoning Of Wells. (7-1-93)

ai. The well owner shall maintain and abandon every well in a manner that will prevent waste and/or contamination of the ground water. The well owner shall be required to abandon a well if the well

1. Cannot be maintained, modified, or repaired to meet minimum well construction standards or to prevent waste and contamination,
2. Does not produce a sufficient quantity of water for beneficial use.
3. Produces water containing sand in concentrations greater than the concentrations listed in Subsection 025.021 below.
4. Poses a threat to human health and safety.

~~Permanently abandoned wells may have the casing removed or left in place and shall be filled with bentonite grout, cement grout, concrete, or puddling clay or other material as required to stop the upward or downward movement of water. If the well is artesian, cement grout, concrete or a packer approved by the Director shall be placed across the confining stratum overlying the artesian zone so as to prevent subsurface leakage from the artesian zone. The remainder of the well shall be filled with cement grout, concrete, or other approved material~~. (7-1-93)

b. The Director may require the abandonment of a well in compliance with the provisions of Rule Subsection 025.12 if ~~if the condition of the well does not meet minimum well construction standards or if~~ there is no valid water right or other authorization acceptable to the Director for use of the well.

c. No person shall abandon a well in Idaho without first obtaining a driller's license or receiving a waiver of the license requirement from the Director of the Department of Water Resources. Authorization is required from the Director prior to the abandonment and the person or Well Driller abandoning the well shall submit to the director a report describing the abandonment.

d. The Director may require abandonment of a well in accordance with one of the following procedures:

i. Cased Wells in which a seal has not been placed from the top of the screen or from top of the perforations up to the surface may be abandoned using one of the following methods:

1. Fill Well and Annulus with Seal. Perforation will be made in the casing from the bottom of the casing to within five feet of the surface. Each perforation shall fully penetrate the casing and will be one and one-half inches long. Perforations shall be at least four equidistant cuts per row and placed in rows every foot from the bottom of the casing to the surface. Seal material shall be injected with sufficient pressure to force sealing material through the perforations and to fill the outside of the casing with seal. A sufficient volume of seal material shall be injected to fill the outside of the casing and to fill the casing to within 5 ft of the surface.
2. Remove Casing. The casing shall be withdrawn and the bore filled with seal material.

ii. Cased Wells in which a seal 4-in. in diameter greater than the outside diameter of the casing has been placed from the top of the screen or perforations up to the surface. The casing shall be filled with seal material from the bottom to within five feet of the surface.

iii. Uncased Wells. Uncased wells shall be filled with seal material from the bottom to within five of the surface.

d. Seal Placement. Seal material shall be installed by one or more of the following methods:

1. Seal material placed below the water table by pressure piping directly to the point of application or by placing by using a dump bailer or tremie tube. When used to place seal material, the

discharge end of the tremie pipe shall be submerged in the grout to avoid breaking the seal while filling the annular space.

2. Cement, cement grout, or neat cement shall be installed below the water table by methods that avoid segregation or dilution of the material.
3. Only dry bentonite manufactured or treated for installation below the water level may be poured into the well.
4. Above the water table, dry granular bentonite may be poured into the borehole or well casing.

~~13.~~ **Completion Of A Well**. ~~The Director shall consider that every well is completed when the well drilling equipment has been removed, unless written notice has been given to the Director by the well driller that he intends to return and do additional work on the well within a specified period of time. Upon completion of the well, the well shall meet all of the required standards. (7-1-93)~~

13. Completion of a Well. Unless the Well Driller has provided written notice to the Director that he intends to return and do additional work on the well within a specified period of time, the Well Driller attests or affirms that he has finished all work on the well and that installation, drilling, construction, modification, and abandonment of the well complies with all of the standards herein when the Well Driller removes the drilling equipment from the well site.

14. Pitless Adapters. ~~The requirement of using seal material in the top eighteen (18) feet of the annular space around the well casing, as set forth in previous sections of these standards, may be altered when a pitless adaptor is installed; the well driller may, at his discretion, stop the well seal at a maximum of six (6) feet (seal from six (6) feet to eighteen (18) feet) below land surface. When a pitless adaptor is used, the adaptor should be of the type approved by the National Sanitation Foundation (NSF) testing laboratory or the approval code adopted by the Pitless Adaptor Division of the Water Systems Council. The pitless adaptor, including the cap or cover, casing extension, and other attachments, must be so designed and constructed to be water tight and to prevent contamination of the potable water supply from external sources. The well owner or person installing the pitless adaptor shall then seal the excavation surrounding the pitless adaptor using bentonite grout or other suitable material.(7-1-93)~~

a. Each person responsible for installing pitless adapters in a well shall install only pitless adapters that are approved by the National Sanitation Foundation (NSF) or Pitless Adapter Division of the Water Systems Council and are correctly marked as meeting one of these certifications..

b Each person responsible for installing pitless adapters in a well shall install only materials that are designed, constructed and will install them in a manner to ensure all components are watertight including the cap, cover, casing extension and other attachments.

c. Each person responsible for installing pitless adapters in a well shall install only materials that have a threaded, flanged, or mechanical connection from the pitless adapter to the lateral discharge.

d. Each person responsible for installing pitless adapters with two (2) inch or smaller discharge line shall:

i. Provide each pitless adapter with a swing joint outside the pitless adapter unit to reduce strain, deformation, and possible leakage of the pitless seal caused by settling soils in the trench; (The orientation of swing joints shall be such that any settling that occurs will tighten the threads.)

ii. Cut a hole with an opening large enough to allow seating of gaskets in the casing with a saw;

iii. Not cut openings in the casing with a torch; and

iv. Provide a contamination-proof entrance connection for electrical cable.

e. Each person responsible for installing pitless adapters with discharge line greater than two (2) inches in diameter shall:

i. Fabricate the adapter from the point of connection with the well casing to the unit cap or cover;

ii. Construct the adapters from materials and weight at least equivalent to and compatible with the well casing;

iii. Thread or weld the adapter to the well casing;.

iv. Install threaded units by drilling a hole not more than one quarter (¼) inch larger than the outer diameter of the pitless shank;

v. Never cut holes in the casing using a torch; and

vi. Field weld to the casing only the shop-assembled adapters specifically designed for field welding to the casing.

15. Dry Hole Wells. The Well Driller shall abandon dry hole wells in accordance with the procedures herein. ~~shall be backfilled with cement grout, concrete or other approved material.~~ ~~(7-1-93)~~

16. Explosives. Explosives used in well construction shall never be detonated inside the required well casing. Approved explosive casing perforators may be exempted by the Director. (7-1-93)

17. Hydraulic Fracturing. Hydraulic fracturing shall be performed only by well drillers licensed in Idaho. The pressure shall be transmitted through a drill string and shall not be transmitted to the well casing. The driller shall provide a report to the Director of the fracturing work which shall include well location, fracturing depth, fracturing pressures and other data as requested by the Department. (7-1-93)

18. Drilling Fluids Or Drilling Additives. ~~Drilling fluids or drilling additives shall not contain drilling fluids or drilling additives a concentration of any substance in excess of drinking water standards as set forth in the current IDAPA 58.01.08, "Rules for Public Drinking Water Systems". The driller shall be responsible for using drilling fluids and additives in accordance with the manufacturer's specifications. Specific products may be approved by the Director on a case-by-case basis.~~ ~~(7-1-93)~~

a. The Well Driller must use only potable water and shall use only drilling fluids or drilling additives that:

i. Are manufactured for use in water wells;

ii. Are National Sanitary Foundation (NSF), American Petroleum Institute (API), or ASTM/ANSI approved; and

iii. Do not contain a concentration of any substance in excess of Primary Drinking Water Standards, as set forth in the current IDAPA 58.01.08, "Rules for Public Drinking Water Systems" in accordance with the manufacturer's specifications.

b. The Well Driller may seek approval from the Director to use specific products on a case-by-case basis.

19. Disinfection And Contamination. ~~No casing, pipe, pumps, artificial gravel packs, drilling tools or other items shall be placed in a well which will cause contamination. Disinfection with a five hundred (500) parts per million chlorine solution (one (1) gallon of chlorine bleach per one hundred (100) gallons clean water) is recommended for all items placed in the well.~~ ~~(7-1-93)~~

a. The Well Driller shall

i. Clean and disinfect all casing, tools, drilling equipment, and materials prior to beginning the drilling and construction of every well.

ii. Disinfect all pumping equipment and sand or gravel used in an artificial filter-packed well and used to develop and pump test the well.

iii. Ensure that only potable water is used for drilling and for mixing of sealing material and shall ensure that the water has a chlorine residual of not more than 1 part per million of free chlorine.

b. Every person shall clean and disinfect the pump, electrical wiring and controls, drop pipe, and all other equipment each and every time the pump, electrical wiring and controls, drop pipe, and other equipment is placed into the well.

c. Each person shall disinfect every well, the pump, electrical wiring and controls, drop pipe, and all other equipment using a 50-mg/L chlorine solution.

d. Every person shall maintain at all times on every well site adequate chlorine compounds to disinfect the well in accordance with the following table.

Chlorine compound required to dose 100-ft of water-filled well at 50 mg/L				
Casing Diameter *in*	Volume of water in casing per 100 ft of water depth *gallons*	Amount of Chemical Compound needed for each 100 ft of water		
		Calcium Hypochlorite[1] (65% available Cl_2)	Sodium Hypochlorite[2] (12 trade percent)	Liquid Chlorine[3] (100 percent available Cl_2) *pounds*
4	65.28	0.7 oz	3.5 oz	0.03
6	146.2	1.5 oz	7.8 oz	0.06
8	261.1	2.7 oz	13.9 oz	0.11
10	408.0	4.2 oz	1.4 pt	0.17
12	587.5	6.0 oz	2.0 pt	0.25
16	1044.0	10.7 oz	3.5 pt	0.44
20	1632.0	1 lb 1oz	0.7 gal	0.68
24	2350.0	1 lb 8 oz	1.0 gal	0.98
30	3672.0	2 lbs 6 oz	1.5 gal	1.53
36	5287.0	3 lbs 6 oz	2.2 gal	2.21
48	9400.0	6 lbs 1 oz	3.9 gal	3.92
60	14690.0	9 lbs 7 oz	6.1 gal	6.13

Footnotes:
[1]The quantity of Calcium Hypochlorite is based on 65 percent available chlorine by dry weight.
[2]The quantity of Sodium Hypochlorite is based on 12-trade-percent available chlorine by US liquid measure. (Trade percent is a term used by chlorine manufacturers. Trade percent x 10 = grams of available chlorine in 1 L of solution.)
[3]Quantity of liquid chlorine is based on 100 percent available chlorine by weight.

c. Every person shall use all disinfectants in accordance with manufacturer's instructions.

d. No person shall pour, dispose, dump, discharge, or inject any fluid, liquid, or chemical into a well that would exceed the Prinary Drinking Water Standards, as set forth in the current IDAPA 58.01.08, "Rules for Public Drinking Water Systems".

20. Well Screens and Intakes

a. The Well Driller (or Well Designer, if different) shall recommend to the well owner (or the owner's representative) the method to bring water into the casing and pump. The Well Driller (or Well Designer, if different) shall recommend a well screen or well intake that prevents the production of sand, silt or turbid water based on the anticipated yield and subsurface conditions. The Well Driller (or Well Designer, if different) may design the well to

i. Obtain water through the open-bottom of the casing in aquifers that are essentially free of sand, silt and turbidity, or

ii. Obtain water through perforations cut in the casing with a saw; torch; mill-slotted or punched; or cut by Star, Mills knife, or other similar type perforators in aquifers that are composed of consolidated rock or coarse-grained, permeable material where the withdrawn water is free of sand, silt or turbidity.

iii. Obtain water through well screens from aquifers composed of sand or silt. The Well Driller (or Well Designer, if different) shall

1. install well screens, pre-packed well screens, or well points constructed of compatible corrosion resistent material;
2. install a neopene or packer at the top of the screen;
3. install a plug or cap at the bottom of the screen.

b. In every well, the Well Driller (or Well Designer, if different) shall install well screens or well intakes that prevent the continued production of sand, silt, or turbid water.

c. No Well Driller shall install or cut perforations in a casing above the highest static water level.

d. Well Drillers shall not use perforated casing as working casing as the hole is being drilled, except in those cases where the Well Driller can, through personal experience in the particular area of drilling, attest to the sufficiency of the perforated casing in all respects for the specific well being constructed.

21. Well Testing and Development. The Well Driller (or Well Designer, if different) shall develop every new well to maximize yield and reduce sand production and determine the yield of the well. The Well Driller (or Well Designer, if different)

a. may develop the well by pumping, surging, fracturing, and washing (including jetting), and

b. shall continue development until the yield closely approximates the potential of the aquifer and well screen or intake and until the water produced by the well does not contain sand in concentrations greater than the amount shown below when the well is pumped at the yield the well owner requires and used for the purposes stated by the Well Owner:

Maximum Sand Content	Use of Well
15 parts per million (ppm) by volume	Wells supplying water for flood irrigation
10 ppm	Well supplying water to sprinkler irrigation systems
5 ppm	Wells supplying water to home, businesses, utilities, and industries
Less than 2 ppm	Wells discharging directly into municipal water treatment or distribution systems
1 ppm	Wells supplying water direction in contact with or in the processing of food and beverages

c. The Well Driller (or Well Designer, if different) may measure the sand content using a Rossum Sand Tester or Imhoff cone. When measuring sand content, the Well Driler (or Well Designer, if different) shall collect at least five (5) gallons of water from wells producing less than 20 gpm and no more than 50 gallons from well producting more than 1000 gal to measure sand content of the water produced by the well.

d. During or after development, the Well Driller shall estimate the yield of each new well .The Well Driller (or Well Designer, if different)

i. May use the bailer-test method, the air-lift test method, or a pump to withdraw water from the well to determine the well's optimal capacity

ii. Shall record on the Well Driller's Report the volume of water produced in gallons per minute and the stabilized pumping level.

026. -- 029. (RESERVED).

030. CONSTRUCTION OF LOW TEMPERATURE GEOTHERMAL RESOURCE WELLS AND BONDING (Rule 30).

01. General. Drillers constructing low temperature geothermal resource wells (bottom hole temperature more than eighty-five (85) Degrees F and less than two hundred twelve (212) Degrees F) shall be qualified under the Well Driller Licensing Rules. All low temperature geothermal resource wells shall be constructed in such a manner that the resource will be protected from waste due to lost artesian pressure and temperature. The owner or well driller is required to provide bottom hole temperature data, but the Director may make the final determination of bottom hole temperature, based upon information available to him. (7-1-93)

a. All standards and guidelines for construction and abandonment of cold water wells shall apply to low temperature geothermal resource wells except as modified by Rule Subsections 030.03, 030.04, and 030.06. (7-1-93)

b. A drilling prospectus shall be submitted to and approved by the Director prior to the construction, modification, deepening or abandonment of any low temperature geothermal resource well. The well owner and the well driller are responsible for the prospectus and subsequent well construction. (7-1-93)

02. Well Owner Bonding. The owner of any low temperature geothermal resource well shall file a surety bond or cash bond as required by Section 42-233, Idaho Code, with the Director in an amount not less than five thousand dollars ($5,000) nor more than twenty thousand dollars ($20,000) payable to the Director prior to constructing, modifying or deepening the well after July 1, 1987. The bond amount shall be determined by the Director within the following guidelines. The bond shall be kept in force for one year following completion of the well or until released in writing by the Director, whichever occurs first. (7-1-93)

a. Any well less than three-hundred (300) feet deep with a bottom hole temperature of less than one hundred twenty (120) Degrees F and a shut-in pressure of less than ten (10) pounds per square inch gage (psig) at land surface shall maintain a bond of five thousand dollars ($5,000). (7-1-93)

b. The owner of any well three hundred (300) feet to one thousand (1,000) feet deep with a bottom hole temperature of less than one hundred fifty (150) Degrees F and a shut-in pressure of less than fifty (50) psig at land surface shall maintain a bond of ten thousand dollars ($10,000). (7-1-93)

c. The owner of any low temperature geothermal resource well not covered by Rules Subsections 030.02.a. and 030.02.b. shall maintain a bond of twenty thousand dollars ($20,000). (7-1-93)

d. The Director may decrease or increase the bonds required if it is shown to his satisfaction that well construction or other conditions merit an increase or decrease. (7-1-93)

e. The bond requirements of Section 42-233, Idaho Code, are applicable to wells authorized by water right permits or licenses having a priority date earlier than July 1, 1987, if the well authorized by the permit or license was not constructed prior to July 1, 1987 or if an existing well constructed within the terms of the permit or license is modified, deepened or enlarged on or after July 1, 1987. (7-1-93)

03. Casing. Low temperature geothermal resource wells shall be protected from cooling by preventing intermingling with cold water aquifers and from loss of pressure by preventing flow into zones of lower pressure. (7-1-93)

a. Casing which meets or exceeds the minimum specifications for permanent steel casing of Rule Subsection 035.02 shall be installed in every well. The Director may require a more rigid standard for collapse and burst strength as depths or pressures may dictate. Every low temperature geothermal resource well which flows at land surface shall have a minimum of forty (40) feet of conductor pipe set and cemented its entire length. (7-1-93)

b. Casing shall be installed from twelve (12) inches above land surface into the overlying confining strata of the thermal aquifer. The casing schedule may consist of several different casing strings (i.e. conductor pipe, surface casing, intermediate casing, production pipe) which may all extend to land surface or may be overlapped and sealed or packed to prevent fluid migration out of the casing at any depth. (7-1-93)

i. Low temperature geothermal resource wells less than one thousand (1,000) feet deep and which encounter a shut-in pressure of less than fifty (50) psig at land surface shall have two (2) strings of casing set and cemented to land surface. Conductor pipe shall be a minimum of forty (40) feet in length or ten percent (10%) of the total depth of the well whichever is greater. Surface casing shall extend into the confining stratum overlying the aquifer. (7-1-93)

ii. Low temperature geothermal resource wells one thousand (1,000) feet or more in depth or which will likely encounter a shut-in pressure of fifty (50) psig or more at land surface require prior approval of the drilling plan by the Director and shall have three strings of casing cemented their total length to land surface. Conductor pipe shall be a minimum length of forty (40) feet. Surface casing shall be a minimum of two hundred (200) feet in length or ten percent (10%) of the total depth of the well, whichever is greater. Intermediate casing shall extend into the confining stratum overlying the aquifer. (7-1-93)

c. Rule Subsection 030.13.b. may be waived if it can be demonstrated to the Director through the lithology, electrical logs, geophysical logs, injectivity tests or other data that formations encountered below the last casing string set, will neither accept nor yield fluids at anticipated pressure to the borehole. (7-1-93)

d. A nominal bore hole size of two (2) inches in diameter larger than the Outside Diameter (O.D.) of the casing or casing coupler (whichever is larger) shall be drilled. All casing designations shall be by O.D. and wall thickness and shall be shown to meet a given specification of the American Petroleum Institute, the American Society for Testing and Materials, the American Water Works Association or the American National Standards Institute. The last string of casing set during drilling operations shall, at the Director's option, be flanged and capable of mounting a valve or blow out prevention equipment to control flows at the surface before drilling resumes. (7-1-93)

04. Sealing Of Casing. All casing shall be sealed its entire length with cement or a cement grout mixture unless waived by the Director. The seal material shall be placed from the bottom of the casing to land surface either through the casing or tubing or by use of a tremie pipe. The cement or cement grout shall be undisturbed for a minimum of twenty-four (24) hours or as needed to allow adequate curing. (7-1-93)

a. A caliper log may be run for determining the volume of cement to be placed with an additional twenty-five (25%) percent on site ready for mixing. If a caliper log is not run, an additional one hundred (100%) percent of the calculated volume of cement shall be on site ready for placement. (7-1-93)

b. If there is no return of cement or cement grout at the surface after circulating all of the cement mixture on site, the Department will determine whether remedial work should be done to insure no migration of fluids around the well bore. (7-1-93)

c. The use of additives such as bentonite, accelerators, retarders, lost circulation material shall follow manufacturer's specifications. (7-1-93)

05. Blow Out Prevention Equipment. The Director may require the installation of gate valves or annular blow out prevention equipment to prevent the uncontrolled blow out of drilling mud and geothermal fluid. (7-1-93)

06. Repair Of Wells. (7-1-93)

a. The well driller shall submit a drilling prospectus to the Director for review and approval prior to the repair or modification of a low temperature geothermal resource well. (7-1-93)

07. Abandoning Of Wells. Proper abandonment of any low temperature geothermal resource well requires the following: (7-1-93)

a. All cement plugs shall be pumped into the hole through drill pipe or tubing. (7-1-93) (See Figure 5, APPENDIX E, (located at the end of this chapter).

b. All open annuli shall be completely filled with cement. (7-1-93)

c. A cement plug at least one hundred (100) feet in vertical depth shall be placed straddling (fifty (50) feet above and fifty (50) feet below) the zone where the casing or well bore meets the upper boundary of each ground water aquifer. (7-1-93)

d. A minimum of one hundred (100) feet of cement shall be placed straddling each drive shoe or guide shoe on all casing including the bottom of the conductor pipe. (7-1-93)

e. A surface plug of either cement grout or concrete shall be placed from at least fifty (50) feet below the top of the casing to the top of the casing. (7-1-93)

f. A cement plug shall extend at least fifty (50) feet above and fifty (50) feet below the top of any liner installed in the well. The Director may waive this rule upon a showing of good cause. (7-1-93)

g. Other abandonment procedures may be approved by the Director if the owner or operator can demonstrate that the low temperature geothermal resource, ground waters, and other natural resources will be protected. (7-1-93)

h. Approval for abandonment of any low temperature geothermal well must be in writing by the Director prior to the beginning of any abandonment procedures. (7-1-93)

031. -- 034. (RESERVED).

035. HEALTH STANDARDS (Rule 35).

01. Public Supply~~. All wells that are constructed for public supply of domestic water shall, in addition to meeting these standards, meet all of the requirements set forth by the Idaho Department of Environmental Quality Rules, IDAPA 58.01.08, "Rules For Public Drinking Water Systems". (7-1-93)~~

The Well Designer shall prepare Plans and Specifications for wells constructed for public supply of domestic water that comply with these standards and that meet all of the requirements set forth by the Idaho Department of Environmental Quality Rules, IDAPA 58.01.08, "Rules For Public Drinking Water Systems".

02. Special Standards For Construction Of Wells When Mineralized Or Contaminated Water Is Encountered~~. Any time in the construction of a well that mineralized or contaminated water is encountered, the well driller shall take the appropriate steps necessary to prevent the poor quality waters from entering the well or moving up or down the annular space around the well casing. The method employed to case out this water shall be determined by the well driller, provided the minimum standards are met. Special precautions must be taken in the~~

~~case of gravel packed wells to prevent water of inferior quality from moving vertically in the gravel packed portions of the well. (7-1-93)~~

If, during the construction of a well, mineralized or contaminated water is encountered, the Well Driller shall take the appropriate steps necessary to prevent the poor quality waters from entering the well or moving up or down the annular space around the well casing. The method employed to case out this water shall be determined by the Well Driller, provided the minimum standards are met. The Well Driller will take special precaustion to prevent water of inferior quality from moving vertically in the filter pack in a filter-pack well.

03. Distances From ~~Contaminate~~ Contamination Sources. ~~All water wells constructed for domestic use shall comply with minimum distances from septic tanks, drain fields, drainfield replacement area and other siting requirements of the Idaho Department of Environmental Quality and the appropriate District Health Department.~~

~~(7-1-93)~~

OPTION #1

The Well Driller shall install every well in compliance with minimum setback distances from contamination sources established by the appropriate District Health Department and set forth in Idaho Department of Environmental Quality rules, set forth in IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules" and set forth in IDAPA 68.01.08, "Rules for Public Water Systems."

OPTION #2

a. The Well Driller shall install every well
   (1) Not less than 10 ft from permanent buildings or structures;
   (2) Not less than 100 ft from septic tank drainfields and areas designated for replacement drainfields;
   (3) Not less than 50 ft from septic tanks;
   (4) Not less than 50 ft from streams, canals, irrigation ditches or laterals, and other permanent, temporary or intermittent bodies of water;
   (5) Not less than 300 ft from any septic tank into which more than 2,500 gallons per day (gpd) of sewage are discharged;
   (6) Not less than 50 ft from a sewer line drained by gravity;
   (7) Not less than 100 ft from a pressurized sewer line.

b. The Well Driller may submit an oral or written request to the Director for a waiver of these minimum distances from contamination sources, if the Well Driller determines that the ground water quality and health and safety of the residents can be protected without complying with the minimum distances from contaminate sources. The Well Driller (or Well Designer, if different) shall submit a written request within 3 business days after the Director grants a waiver based on the oral request.

c. After receipt of a waiver from the Director, the Well Driller shall request for waiver of the set back distances from the appropriate District Health Department and from the Idaho Department of Environmental Quality.

OPTION #3

a. At those locations where the Well Driller determines, prior to submitting a Start Card or application for well construction, that the well cannot be installed in compliance with the minimum setback distances, the Well Driller shall install seals to greater depth in accordance with the following schedule:

Maximum attainable offset	**seal depth**
80' to 100'	38 vertical feet
70' to 80'	48 vertical feet
60' to 70'	58 vertical feet
50' to 60'	68 vertical feet

40' to 50'	78 vertical feet
30' to 40'	88 vertical feet
20' to 30'	100 vertical feet

c. The Well Driller shall not install any well less than 20 feet from a drainfield.

04. Well Maintenance. ~~The well owner shall be responsible for properly maintaining the well. All wells shall be capped, covered and sealed such that debris cannot enter the well, persons or animals cannot fall into the well, and water cannot enter the well around the outside of the casing.~~ (7-1-93)

After a well is complete, the well owner shall:

a. Maintain every well to prevent against waste and contamination of the groundwater resources of the State of Idaho;

b. Ensure that each well is capped, covered, and sealed at all times;

c. Prevent the entry of debris, persons, and animals into the well;

d. Prevent the movement of water from the surface down the outside of the casing; and

e. Ensure that:

i. Permanent buildings or structures are not constructed closer than 10 ft from the well;

ii. Septic tank drainfields and areas designated for replacement drainfields are not placed closer than 100 ft from the well;

iii. Septic tanks are not installed less than 50 ft from the well; and

iv. Septic tanks into which more than 2,500 gallons per day (gpd) of sewage are discharged are not installed less than 300 ft from the well.

036. -- 039. (RESERVED).

040. AREAS OF DRILLING CONCERN (Rule 40).

01. General. (7-1-93)

a. The Director may designate an “area of drilling concern” to protect public health, or to prevent waste and contamination of ground and/or surface water because of factors such as aquifer pressure, vertical depth to the aquifer, warm or hot ground water, or contaminated ground or surface waters. (7-1-93)

b. The designation of an area of drilling concern does not supersede or preclude designation of part or all of an area as a Critical Ground Water Area (Section 42-233a, Idaho Code), Ground Water Management Area (Section 42-233b, Idaho Code), or Geothermal Resource Area (Sections 42-4002 and 42-4003, Idaho Code).(7-1-93)

c. The designation of an area of drilling concern can include certain aquifers or portions thereof while excluding others. The area of drilling concern may include low temperature geothermal resources while not including the shallower cold ground water systems. (7-1-93)

02. Bond Requirement. (7-1-93)

a. The minimum bond to be filed by the well driller with the Director for the construction or modification of any well in an area of drilling concern shall be ten thousand dollars ($10,000) unless it can be shown to the satisfaction of the Director that a smaller bond is sufficient. (7-1-93)

b. The Director may determine on a case-by-case basis if a larger bond is required based on the estimated cost to repair, complete or properly abandon a well. (7-1-93)

03. Additional Requirements.

(7-1-93)

a. A driller shall demonstrate to the satisfaction of the Director that he has the experience and knowledge to adequately construct or abandon a well which encounters warm water or pressurized aquifers. (7-1-93)

b. A driller shall demonstrate to the satisfaction of the Director that he has, or has immediate access to, specialized equipment or resources needed to adequately construct or abandon a well. (7-1-93)

041. -- 044. (RESERVED).

045. DRILLING PERMIT REQUIREMENTS (Rule 45).

01. General Provisions. (7-1-93)

a. The owner of a well to be constructed, drilled, deepened or enlarged on or after July 1, 1987 shall obtain a drilling permit from the Director prior to construction or drilling of the well. (7-1-93)

b. The owner of a well under construction prior to July 1, 1987, for which the drilling equipment is at the site and construction is ongoing, shall not be required to obtain a drilling permit, provided that construction of the well was complete by August 1, 1987. The Director may extend the date for good cause. (7-1-93)

c. The Director may issue a drilling permit to the owner of a proposed well, to the driller employed to construct the well, or to the owner's representative. (7-1-93)

d. Drilling permits will not be issued for construction of a well which requires another separate approval from the department, such as a water right permit, transfer, amendment or injection well permit, until the other separate approval has been given by the department. The Director may grant a waiver if he determines that the public interest will be served by an expedited approval. (7-1-93)

e. The Director may give verbal approval to a well driller for the construction of certain wells such as single family domestic wells and stockwater wells which do not require other separate approvals from the department, provided the driller files the drilling permit and appropriate fee with the Director within thirty (30) days of the verbal approval. (7-1-93)

f. The Director may give verbal approval to a well driller for the construction of a well for which other permitting requirements have been met, provided the driller files the drilling permit and appropriate fee with the Director within thirty (30) days of the verbal approval. (7-1-93)

g. The Director will not give a verbal approval for well construction or drilling in a designated area of drilling concern. (7-1-93)

h. Failure of the driller to submit a completed drilling permit and fee within the thirty (30) day period after receiving verbal approval to construct a well is cause for the Director to seek the penalties provided by statute and by these rules. (7-1-93)

i. After the effective date of these rules, a well driller shall not construct, drill or modify any well until a drilling permit has been issued or verbal approval is given. (7-1-93)

02. Effect Of A Permit. (7-1-93)

a. A drilling permit authorizes the construction, drilling or modification of a well in compliance with the conditions of approval on the permit. (7-1-93)

b. A drilling permit does not constitute a water right permit, injection well permit or other authorization which may be required from the department prior to actual well construction and does not authorize use of water from the well or discharge of fluids into the well. (7-1-93)

c. A drilling permit may not be assigned from one owner to another. (7-1-93)

d. A drilling permit authorizes the construction of one (1) well (except group monitoring well drilling permits) unless other holes started under terms of the permit are properly abandoned and the department is advised of the abandonment. (7-1-93)

03. Exclusions. (7-1-93)

a. Geotechnical borings for the purpose of mineral exploration or for the design of foundations for structures or for the design of dams and embankments are not subject to the drilling permit requirement but shall be constructed and abandoned in accordance with minimum well construction standards. (7-1-93)

b. The Director may require abandonment of wells constructed pursuant to Rule 045.03.a. if the wells are determined to cause waste or contamination of the ground water. (7-1-93)

c. Wells constructed pursuant to Rule Subsection 045.03.a. shall be abandoned in compliance with adopted rules when use of the wells cease. (7-1-93)

04. Fees. (7-1-93)

a. A drilling permit fee is not required for a well constructed and completed prior to July 1, 1987, provided the well is not deepened or the dimensions of the well are not increased on or after July 1, 1987. (7-1-93)

b. The drilling permit fee for construction of a well for a single family domestic use, stockwater use, class V(c) heat pump injection associated with a single family domestic use or monitoring use or for any use with a rate of diversion of four one hundreths (0.04) cubic feet per second or less and for the storage of four (4) acre-feet per year or less shall be ten ($10) dollars. (See IDAPA 37.03.03, "Rules for Construction and Use of Injection Wells" for the description of class V(c) injection wells). (7-1-93)

c. The Director may issue a blanket drilling permit for site specific monitoring programs prepared by a licensed engineer or licensed geologist as provided in Section 42-235, Idaho Code, upon submittal of a fifty dollar ($50) fee. (7-1-93)

d. The drilling permit fee for well uses which are not included in Rules Subsections 045.04.b. and 045.04.c. shall be one hundred dollars ($100). (7-1-93)

e. The difference between the drilling permit fee required by Rules Subsections 045.04.b. through 045.04.d., as applicable, shall be paid when an existing well constructed on or after July 1, 1987, for which the lower drilling permit fee was paid, is authorized by the Department for a use which would require the larger drilling permit fee. This rule applies even though the existing well is not deepened or the dimensions of the well are not increased. (7-1-93)

f. A drilling permit fee will not be required for a new or additional use from an existing well constructed on or after July 1, 1987, when the drilling permit fee for the new or additional use is the same amount which was previously paid for construction of the well in connection with the existing use. (7-1-93)

046. -- 049. (RESERVED).

050. PENALTIES (Rule 50).

A person owning or controlling a well that allows waste or contamination of the state's ground water resources or causes a well not to meet the construction standards provided in these rules, is subject to the civil penalties as provided by statute. A driller who violates the foregoing provisions of these minimum well construction standards rules is subject to the penalty provisions specified in 42-238 and 42-238b, Idaho Code. (7-1-93)

051. -- 999. (RESERVED).